

Lockheed Environmental Systems & Technologies Co.
Lockheed Analytical Services
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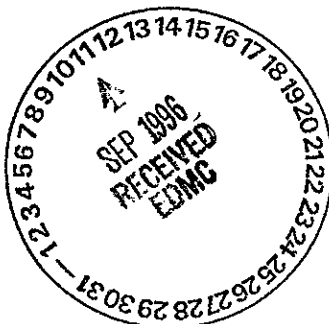
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LOCKHEED MARTIN

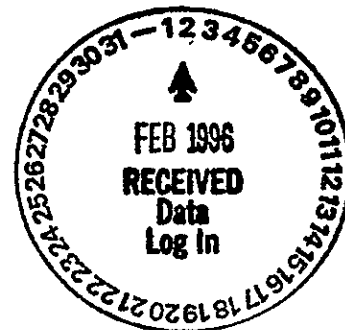
LK6166

January 30, 1996

Ms. Joan Kessner
Bechtel Hanford, Inc.
P.O. Box 969
1022 Lee Boulevard
Richland, WA 99352



RE: Log-in No.:	L6166
Quotation No.:	Q400000-B
SAF:	B96-035
Document File No.:	0110596
BHI Document File No.:	316
SDG No.:	LK6166



The attached data report contains the analytical results of samples that were submitted to Lockheed Analytical Services on 10 January 1996.

The temperature of the cooler upon receipt was 2°C. Sample containers received agree with the chain-of-custody documentation. Sample containers were received intact. Samples designated for hexachrome analysis were not received in time to meet the analytical holding time requirements.

The case narratives included in the following attachments provide a detailed description of all events that occurred during sample preparation, analysis, and data review specific to the samples and analytical methods requested.

A list of data qualifiers, chain-of-custody forms, sample receiving checklist, and log-in report are also enclosed representing the samples received within this group.

If you have any questions concerning the analysis or the data please call Kathleen Hall at (509) 375-4741.

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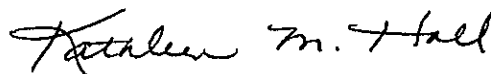
Lockheed Analytical Services

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Release of this data report has been authorized by the Laboratory Director or the Director's designee as evidenced by the following signature.

" I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

Sincerely,

A handwritten signature in black ink that reads "Kathleen M. Hall". The signature is written in a cursive, flowing style.

Kathleen M. Hall
Client Services Representative

cc: Client Services
Document Control

**CASE NARRATIVE
INORGANIC NON METALS ANALYSES**

The routine calibration and quality control analyses performed for this batch include as applicable: initial and continuing calibration verification, initial and continuing calibration blanks, method blank(s), laboratory control sample(s), matrix spike (predigestion) sample(s), duplicate sample(s).

Preparation and Analysis Requirements

- Two water samples were received for LK6166 and analyzed in batch 110 bh for selected analytes as requested on the chain of custody. Quality control analysis was performed on the following samples:

Client ID	LAL #		Method
BOGZ64	L6166-3	MS, DUP	7196 Chromium (VI)

Holding Time Requirements

- All samples were received outside of the method-specific holding time and are flagged with an "H".

Method Blanks

- The concentration levels of all the requested analytes in the method blank were below the reporting detection limits.

Internal Quality Control

- All Internal Quality Control were within acceptance limits.

Kay McCann
Prepared By

January 16, 1996
Date

CASE NARRATIVE INORGANIC METALS ANALYSES

The routine calibration and quality control analyses performed for this batch include as applicable: instrument tune (ICP/MS only), initial and continuing calibration verification, initial and continuing calibration blanks, method blank(s), laboratory control sample(s), ICP interference check samples (ICP only), serial dilutions, analytical (post-digestion) spike samples, matrix spike (predigestion) sample(s), duplicate sample(s).

Preparation and Analysis Requirements

All samples were received on January 10, 1996. The samples were logged in as L6166 and were prepared and analyzed in batch 110 bh.

Holding Time Requirements

- All samples were analyzed within the method-specific holding times.

Method Blanks

- The concentration levels of all the requested analytes in the method blank were below the reporting detection limits.

Internal Quality Control

- All Internal Quality Control were within acceptance limits.
- The matrix spike recovery for chromium exceeded the 75-125% acceptance limit, however, the sample concentration is considered significant (i.e., greater than four times the spiking level) relative to the amount spiked into the sample. Therefore, the data are not qualified.

Shellee McGrath
Prepared By

January 30, 1996
Date

Lockheed Analytical Services
DATA QUALIFIERS FOR INORGANIC ANALYSES

[Revised 08/28/92]

For Use on the Analytical Data Reporting Forms	
B	<i>For CLP Analyses Only</i> -- Reported value is less than the contract required detection limit (CRDL) but greater than or equal to the instrument detection limit (IDL).
C	<i>For Routine, Non-CLP Analyses Only</i> -- Any constituent that was also detected in the associated blank whose concentration was greater than the reporting detection limit (RDL).
D	Presence of high levels of interfering constituents required dilution of sample which increased the RDL by the dilution factor.
E	Estimated value due to presence of interference.
H	Sample analysis performed outside of method-or client-specified maximum holding time requirement.
M	<i>For CLP Analyses Only</i> -- Duplicate injection precision criterion was not met.
N	Matrix spike recovery exceeded acceptance limits.
S	Reported value was determined from the method of standard addition.
U	<i>For CLP Reporting Only</i> -- Constituent was analyzed for but not detected (sample quantitation must be corrected for dilution and percent moisture).
W	<i>For AAS Only</i> -- Post-digestion spike for Furnace AAS did not meet acceptance criteria and sample absorbance is less than 50% of spike absorbance.
X, Y, or Z	Analyst-defined qualifier.
*	Relative percent difference (RPD) for duplicate analysis exceeded acceptance limits.
+	Correlation coefficient (r) for the MSA is less than 0.995.
For Use on the QC Data Reporting Forms	
a¹	The spike recovery and/or RPD for matrix spike and matrix spike duplicates cannot be evaluated due to insufficient spiking level compared to the elevated sample analyte concentration.
b¹	The RPD cannot be computed because the sample and/or duplicate concentration was below the RDL.

¹ Used as footnote designations on the QC summary form.

LOCKHEED ANALYTICAL SERVICES
 LOGIN CHAIN OF CUSTODY REPORT (ln01)
 Jan 10 1996, 02:27 pm

Login Number: L6166
 Account: 596 Bechtel Hanford, Inc. * Richland, WA
 Project: BECHTEL-HANFORD Bechtel Hanford Project

Laboratory Sample Number	Client Sample Number	Collect Date	Receive Date	Due PR Date
L6166-1 temp 2 Location: 157 Water 1 S SCREENING	BOGZ64	05-JAN-96	10-JAN-96	14-FEB-96
		Hold:03-JUL-96		
L6166-2 temp 2 Location: 157 Water 1 S SCREENING	BOGZ65	05-JAN-96	10-JAN-96	14-FEB-96
		Hold:03-JUL-96		
L6166-3 temp 2 Location: 157 Water 1 S 7196 CHROMIUM (VI)	BOGZ64	05-JAN-96	10-JAN-96	14-FEB-96
		Hold:06-JAN-96		
L6166-4 temp 2 Location: 157 Water 1 S 7196 CHROMIUM (VI)	BOGZ65	05-JAN-96	10-JAN-96	14-FEB-96
		Hold:06-JAN-96		
L6166-5 temp 2; Cr ONLY Location: 157 Water 1 S 200.7 METALS	BOGZ64	05-JAN-96	10-JAN-96	14-FEB-96
		Hold:03-JUL-96		
L6166-6 temp 2; Cr ONLY Location: 157 Water 1 S 200.7 METALS	BOGZ65	05-JAN-96	10-JAN-96	14-FEB-96
		Hold:03-JUL-96		
L6166-7 Location: Water 1 S EDD - DISK DEL. Water 1 S INORG TYPE 2 RPT	REPORT TYPE	10-JAN-96	10-JAN-96	14-FEB-96

Signature: Amilla
 Date: 1-10-96 0009

C11C196

Bechtel Hanford, Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST L6166										Page <u>1</u> of <u>1</u>		
Collector K. Trapp				Company Contact B. D. Blumenkranz				Telephone (509) 372-9658				Data Turnaround <input type="checkbox"/> Priority <input checked="" type="checkbox"/> Normal		
Project Designation 100-HR-3 Pump and Treatment				Sampling Location 100-HR-3 Pump and Treat				SAF No. B96-035						
Ice Chest No. <i>Hammen</i>				Field Logbook No. <i>FE-111-1-2</i>				Method of Shipment Federal Express						
Shipped To Lockheed				Offsite Property No. <i>W76-0-0640-15</i>				Bill of Lading/Air Bill No. <i>00960 2904649002</i>						
Possible Sample Hazards/Remarks				Preservation		HNO ₃	Cool 4°C	None						
				Type of Container		P/G	P/G	P						
				No. of Container(s)		1	1	1						
Special Handling and/or Storage Maintain samples between 2°C and 6°C				Volume		500mL	500mL	20mL						
SAMPLE ANALYSIS						Chrom- ium - Total	Chrom- ium VI	Activity Scan						
Sample No.	Matrix*	Date Sampled	Time Sampled											
BOGZ64	W	1/5/96	<i>2255</i>	X	X	X								
BOGZ65	W	1/5/96	<i>1005</i>	X	X	X								
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS Analysis for Chromium (VI) by SW-846 7196 is being requested for information only. The ERC Contractor acknowledges that the 24-hour holding time will not be met.				Matrix* S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other		
Relinquished By <i>K. J. M.../K. Trapp</i>		Date/Time <i>0815 1/9/96</i>		Received By <i>Bill Whitton</i>		Date/Time <i>0815 1-9-96</i>								
Relinquished By <i>Bill Whitton</i>		Date/Time <i>0830 1-9-96</i>		Received By		Date/Time								
Relinquished By		Date/Time		Received By		Date/Time								
Relinquished By		Date/Time		Received By		Date/Time								
LABORATORY * SECTION		Received By <i>[Signature]</i>		Title <i>Sample Custodian</i>		Date/Time <i>1-10-96</i>		<div style="float: right; margin-right: 20px;"><i>0900</i></div>						
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By		Date/Time								

0010

Fed X

290 4549 002

WHC-SOW-93-0003
Revision 4

SAMPLE CHECK-IN LIST

Date/Time Received: 1-10-96/0900 SDG#: N/AWork Order Number: N/A SAF #: B96-035Shipping Container ID: HAMMER Chain of Custody #: N/A

1. Custody Seals on shipping container intact? Yes ☒ No ☐
2. Custody Seals dated and signed? Yes ☒ No ☐
3. Sample temperature 2°C
4. Vermiculite/packing materials is Wet ☐ Dry ☒
5. Each sample is in a plastic bag? Yes ☒ No ☐
6. Sample holding times exceeded? Yes ☒ No ☐

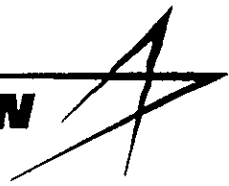
7. Samples have:
X tape X hazard labels
X custody seals X appropriate sample labels

8. Samples are:
X in good condition leaking
 broken have air bubbles

9. Is the information on the COC and Sample bottles in agreement?

Yes ☒ No ☐Notes: Hex Chrom. received out of holding timeSample Custodian/Laboratory: A. Miller Date: 1-10-96Telephoned To: Kathleen Hall On 1-10-96 By Anthony Miller

LOCKHEED MARTIN



Sample Login Login Review Checklist

Lot Number 46166

The login review should be conducted by that person logging in the samples as well as a peer. Please use this checklist to ensure that such reviews occur in a uniform basis. Please sign and date below to verify that a login review has occurred. This checklist should be affixed to each login package prior to distribution.

For effective login review, at a minimum, five reports from the login process are required. These are the COC (or equivalent), the login COC report, the sample summary report, the sample receiving checklist, and the login quotation. Before beginning review, ensure that these five components are available. Jobs with single component samples, the sample summary report may be omitted.

SAMPLE SUMMARY REPORT

	<u>YES</u>	<u>NO</u>	<u>N/A</u>	<u>Comment</u>
1. Are all sample ID's correct?	<u>X</u>	—	—	_____
2. Are all samples present?	<u>X</u>	—	—	_____
3. Are all matrices indicated correctly?	<u>X</u>	—	—	_____
4. Are all analyses on the COC logged in for the appropriate samples?	<u>X</u>	—	—	_____
5. Are all analyses logged in for the correct container?	<u>X</u>	—	—	_____
6. Are samples logged in according to LAS batching procedures?	<u>X</u>	—	—	_____

LOGIN CHAIN OF CUSTODY

	<u>YES</u>	<u>NO</u>	<u>N/A</u>	<u>Comment</u>
1. Are the collect, receive, and due dates correct for every sample?	<u>X</u>	—	—	_____
2. Have all appropriate comments been indicated in the comment section?	—	—	<u>X</u>	_____

SAMPLE RECEIVING CHECKLIST

	<u>YES</u>	<u>NO</u>	<u>N/A</u>	<u>Comment</u>
1. Are all discrepancies between the COC and the login noted (if applicable)?	—	—	<u>X</u>	_____

Adam Allen
primary review signature

1-10-96
date

Paul C. Davis
secondary review signature

1-10-96 0012
date
0110596

Lockheed Analytical Services Sample Receiving Checklist

Page 1 of

Client Name: *Bechtel Hanford*

Job No. *LH/LC-6*

Cooler ID:

COOLER CONDITION UPON RECEIPT

Temperature of cooler upon receipt:

2°C

temperature of temp. blank upon receipt:

	Yes	No	* Comments/Discrepancies
custody seals intact	<i>X</i>		
chain of custody present	<i>X</i>		
blue ice (or equiv.) present/frozen	<i>X</i>		
rad survey completed	<i>X</i>		

SAMPLE CONDITION UPON RECEIPT

	Yes	No	* Comments/Discrepancies
all bottles labeled	<i>X</i>		
samples intact	<i>X</i>		
proper container used for sample type	<i>X</i>		
sample volume sufficient for analysis	<i>X</i>		
proper pres. indicated on the COC	<i>X</i>		
VOA's contain headspace			<i>mt</i>
are samples bi-phasic (if so, indicate sample ID'S):			<i>mt</i>

MISCELLANEOUS ITEMS

	Yes	No	* Comments/Discrepancies
samples with short holding times	<i>X</i>		<i>Hex Chron. received out of holding time</i>
samples to subcontract		<i>X</i>	

ADDITIONAL COMMENTS/DISCREPANCIES

Completed by / date: *Adm 1-10-96*

Sent to the client (date/initials):

** Client's signature upon receipt:

Notes: * = contact the appropriate CSR of any discrepancies immediately upon receipt

** = please review this information and return via facsimile to the appropriate CSR (702) 361-8146

C110546

0-013

Lockheed Analytical Laboratory
SAMPLE SUMMARY REPORT (su02)
Bechtel Hanford, Inc. * Richland, WA

Client Sample Number	LAL Sample Number	SDG Number	Matrix	Method
BOGZ64 ~	L6166-1 L6166-3 L6166-5		Water Water Water	-SCREENING - -7196 CHROMIUM (V) - 200.7 METALS -
BOGZ65 -	L6166-2 L6166-4 L6166-6		Water Water Water	-SCREENING - -7196 CHROMIUM (V) 200.7 METALS -
REPORT TYPE -	L6166-7 L6166-7		Water Water	EDD - DISK DEL. INORG TYPE 2 RPT

0014
C110346

LOCKHEED ANALYTICAL SERVICES

Sample Results

Client Sample ID: BOGZ64	Date Collected: 05-JAN-96
Matrix: Water	Date Received: 10-JAN-96
Percent Solids: N/A	

Constituent	Units	Method	Result	Project Reporting Limit	Data Qualifier(s)	Date Analyzed	LAS Batch ID	LAS Sample ID
Chromium, hexavalent	mg/L	7196	0.90	0.10	HD(1:5)	11-JAN-96	32335	L6166-3

LOCKHEED ANALYTICAL SERVICES

Sample Results

Client Sample ID: B0GZ65	Date Collected: 05-JAN-96
Matrix: Water	Date Received: 10-JAN-96
Percent Solids: N/A	

Constituent	Units	Method	Result	Project Reporting Limit	Data Qualifier(s)	Date Analyzed	LAS Batch ID	LAS Sample ID
Chromium, hexavalent	mg/L	7196	0.78	0.10	HD(1:5)	11-JAN-96	32335	L6166-4

LOCKHEED ANALYTICAL SERVICES

Sample Results

Client Sample ID: B0GZ64	Date Collected: 05-JAN-96
Matrix: Water	Date Received: 10-JAN-96
Percent Solids: N/A	

Constituent	Units	Method	Result	IDL	RDL	Data Qual	Dilution	Date Analyzed	LAS Batch ID	LAS Sample ID
CHROMIUM, TOTAL	mg/L	6010	0.82	0.0010	0.010		1	24-JAN-96	32378	L6166-5

0021

LOCKHEED ANALYTICAL SERVICES

Sample Results

Client Sample ID: BOGZ65	Date Collected: 05-JAN-96
Matrix: Water	Date Received: 10-JAN-96
Percent Solids: N/A	

Constituent	Units	Method	Result	IDL	RDL	Data Qual	Dilution	Date Analyzed	LAS Batch ID	LAS Sample ID
CHROMIUM, TOTAL	mg/L	6010	0.72	0.0010	0.010		1	24-JAN-96	32378	L6166-6